

## OFFICE OF POLAR PROGRAMS

The Earth's polar regions offer compelling scientific opportunities, but their isolation and extreme climate challenge the pursuit of these opportunities.

The National Science Foundation (NSF) supports Arctic and Antarctic research and education, both to improve understanding of the regions and their relationship with global processes and to seize opportunities presented by the regions as research platforms. Support is provided for investigations in a range of scientific disciplines in the physical, biological, and social sciences. This range and the unique aspects of polar regions provide opportunities to advance discovery while promoting teaching, training, and learning.

In addition to providing individual grants to scientists and educators at U.S. institutions, NSF funds contractor-provided operational support to field and laboratory science in Antarctica, the Southern Ocean, and the Arctic.

Foundation funding for polar research and education comes from the following sources:

- [Antarctic Sciences \(Office of Polar Programs\)](#)
- [Arctic Sciences \(Office of Polar Programs\)](#)
- Educational Activities\* (Education and Human Resources Directorate)
- [Crosscutting Programs \(Foundation-wide\)](#)

*\*Note: Although these areas of NSF do not generally offer polar-specific programs, they can consider and support polar proposals.*



### For More Information

Visit the Office of Polar Programs (OPP) home page, <http://www.nsf.gov/od/opp/>; or visit the OPP Advisory Committee web page to read about ongoing issues regarding OPP and the NSF merit review criterion 2 (broader impacts), [http://www.nsf.gov/od/opp/opp\\_advisory/oaccrit2.htm](http://www.nsf.gov/od/opp/opp_advisory/oaccrit2.htm); or the NSF home page, <http://www.nsf.gov/>. Further information on the NSF Merit Review Criteria is also available in the Introduction section of this Guide.

## OFFICE OF POLAR PROGRAMS

# Antarctic Sciences

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### United States Antarctic Program

The United States Antarctic Program (USAP) encompasses U.S. Government-sponsored activities in the region roughly south of 60° south latitude. NSF funds and manages this national program, which centers on scientific research and includes operational support provided by contractors and the military. The program supports the range of U.S. Antarctic interests including adherence to the Antarctic Treaty.

USAP-supported research has two thrusts:

- to understand the Earth and its systems, with emphasis on Antarctica's influence on and response to these systems; and
- to utilize Antarctica as a research site by supporting studies made possible by the unusual and extreme conditions on the continent and in the surrounding ocean.

USAP supports research that is *best* carried out in the Antarctic, or that can be carried out *only* in the Antarctic.

The Office of Polar Programs Antarctic research support is available through the following programs:

1. [Antarctic Aeronomy and Astrophysics](#)
2. [Antarctic Biology and Medicine](#)
3. [Antarctic Geology and Geophysics](#)
4. [Antarctic Glaciology](#)
5. [Antarctic Ocean and Climate Systems](#)
6. [Antarctic Operational Support](#)

### Non-U.S. Facilities–International Cooperation

NSF encourages scientists from the United States to participate in cooperative research programs and activities sponsored by and/or involving other Antarctic Treaty nations.

Scientists interested in submitting a proposal for such a program are strongly encouraged to contact an OPP program manager first, to allow NSF time to coordinate the operational support needs with the other participating country or countries.

### Eligibility Requirements for USAP

U.S. academic institutions and academically oriented, nonprofit organizations may submit proposals for research support. Industrial firms and state and local agencies may be eligible. Other federal agencies may coordinate their research needs within the framework of NSF-supported Antarctic logistics.

NSF encourages proposals from everyone, including women, minorities, and persons with disabilities,

as well as proposals for research that includes undergraduates as stated in the guidelines established by NSF programs such as Research Experiences for Undergraduates.

Persons selected to work in the Antarctic must pass physical and dental examinations whose standards are specified by USAP. Prospective winterers must pass a psychological examination as well.

### Deadlines and Target Dates for USAP

The annual deadline for receipt of proposals for the U.S. Antarctic Program (Office of Polar Programs) is June 1.

Crosscutting programs and education programs may have different deadlines.

An "Operational Requirements Worksheet" (available at <http://esp.polar.org/>) is required if the proposed project will involve fieldwork in the Antarctic. This includes the use of NSF-funded ice-capable Antarctic research ships. The worksheets have a deadline of June 1, 2003, for projects that would take place in the Antarctic beginning in the 2004-2005 austral summer.

To confirm a deadline date, refer to the NSF E-Bulletin (<http://www.nsf.gov/home/ebulletin/>); or the OPP home page, <http://www.nsf.gov/od/opp/>; or the appropriate program office.

### Literature

Although NSF program announcements and guidelines remain the primary starting point for individuals interested in applying for NSF support, additional resources are available that can also provide valuable information. A range of literature referencing research priorities for the Antarctic is available on the OPP home page, <http://www.nsf.gov/od/opp/>. Contact the source indicated.

In addition, the following are also available:

- Publications containing research recommendations, available from the National Academy of Sciences (NAS). Write to the Polar Research Board, 500 5th Street, N.W., TNA-751, Washington, DC 20011; or contact by telephone, 202-334-3479; or visit the NAS home page, <http://www.nas.edu/>.
- *Antarctic Bibliography*, in cooperation with NSF is published by the American Geological Institute (AGI) under cooperative agreement OPP 99-09727. You can search the Antarctic database at <http://www.coldregions.org/>. Under a cooperative agreement between AGI and the National Information Services Corporation (NISC), the *Antarctic Bibliography* (and other polar bibliographies) is collectively available online at the NISC home page, <http://www.nisc.com/>, and also on CD-ROM.
- The U.S. Geological Survey (USGS) in a joint program with NSF, has Antarctic reconnaissance and geologic maps of portions of Antarctica at various scales; maps of the entire continent; an extensive collection of Antarctic aerial photographs; current and historical handheld photography; and other materials. For more information, visit the USGS United States Antarctic Resource Center web site, <http://usarc.usgs.gov/>.
- Ice cores, seabed cores, terrestrial sedimentary cores, dredged rocks, biotic specimens, meteorites, and seafloor photographs are available for study. For more information, refer to the *Antarctic Research Program Announcement (NSF 02-086)*.
- NSF's Antarctic Artists and Writers Program supports documentation of America's Antarctic heritage by providing field access (but not funds) to painters, poets, photographers, authors, educational specialists, and representatives of related genres. For complete information about this program, including details on eligibility criteria, visit the Antarctic Artists and Writers Program web site, <http://www.nsf.gov/od/opp/>.



### For More Information

For further information, including the areas of research supported by USAP; material to help proposers evaluate the potential environmental impact of their projects; and descriptions of operational needs in Antarctica, refer to the *Antarctic Research Program Announcement (NSF 02-086)*.

For questions regarding field operations and logistics to Antarctica, contact the Polar Research Support Section at 703-292-8032; or visit the Raytheon Polar Services Company web site, <http://www.polar.org/>.

Research and education proposals that will not require fieldwork or that will use samples already in U.S. depositories are welcome.

For further information, contact the Office of Polar Programs, National Science Foundation, 4201 Wilson Boulevard, Room 755, Arlington, VA 22230; or visit the OPP home page, <http://www.nsf.gov/od/opp/>. Specialists are available in each of the science areas discussed in this section, as well as in logistics, field camps, research ships, laboratory support, waste management, environmental protection, safety, and Antarctic Conservation Act permits.

## 1. Antarctic Aeronomy and Astrophysics

Supports research projects in the following areas:

- **Astrophysics**—Because of its location at the Earth's spin axis on the 2.8-kilometer-thick East Antarctic Ice Sheet, South Pole Station is well situated for long, continuous astronomical and astrophysical observations. The high elevation of the station (2,835 meters), dry atmosphere, extremely low effective sky temperature, isolation from noise, and long periods of clear weather provide superior observing conditions.
- **Long-Duration Ballooning**—In cooperation with the National Aeronautics and Space Administration, NSF has developed the capability to launch balloon science payloads from McMurdo Station. These payloads weigh more than a ton and can reach altitudes of approximately 40 kilometers. The balloons then drift once or twice over the South Pole during a 10- to 30-day period. This capability can be used by several disciplines and in some cases can serve as a low-cost substitute for space flight.
- **Upper Atmosphere Physics**—Supports unique studies of the Earth's magnetosphere and ionosphere and of Sun/Earth relationships. Year-round station-based research is possible in Antarctica because of its physically stable location at high geomagnetic latitudes, which range from 53° south at Palmer Station to 79° south at McMurdo Station. Automatic Geophysical Observatories provide year-round support for low-powered autonomous instruments at several remote sites on the ice sheet. Research objectives include improving the understanding of Earth's upper atmosphere and near-space environment; investigating coupling among the neutral atmosphere, the ionosphere, and the magnetosphere; and investigating solar terrestrial effects.

## 2. Antarctic Biology and Medicine

Supports research projects in the following areas:

- **Marine Biology/Biological Oceanography**—Supports research on the oceans around Antarctica, which make up one of the world's more productive marine regions. Research objectives are to understand the structure and function of the Antarctic marine ecosystems and to determine the adaptations of organisms and acquire more knowledge of their distribution, abundance, and dynamics. The major focus is on ship- and shore-based studies that stress trophodynamics, including detailed investigations at all trophic levels. Topics of particular interest include interdisciplinary studies of carbon and nutrient cycling, krill, ice-edge ecosystems, and low-temperature adaptations.
- **Medical Research**—Biomedical studies are directed toward physiological and psychological attributes and adaptations of people in small, isolated groups.
- **Terrestrial and Freshwater Biology**—Biota of terrestrial and freshwater Antarctica, particularly their adaptation to the extreme environment, are of particular interest. The simplicity of these ecosystems provides opportunities for analysis that is more difficult and sometimes impossible in the complex systems of the lower latitudes. The primary research objective is to understand the effects of the physical environment on the biota and adaptations of organisms, and to gain further knowledge of their distribution, abundance, and dynamics.

### 3. Antarctic Geology and Geophysics

Supports research projects in the following areas:

- **Marine Geology and Geophysics**—The seafloor around Antarctica is complex and presents fundamental problems in marine geology and geophysics. Its sediments provide detailed records of changes over time in the size of the Antarctic ice sheet, as well as clues to other geological and tectonic processes that have affected the continent. Research objectives are to interpret geological and glacial history and to understand geological processes from studies of the continental margins and the adjacent oceanic crust.
- **Terrestrial Geology and Geophysics**—Antarctica represents about 9 percent of the Earth's continental crust and has been in a near-polar position for more than 100 million years. Reconnaissance studies have led to increased understanding of many general aspects of the geology of the continent, and major evidence has developed in support of plate tectonics models and of the Gondwana supercontinent. Antarctic geology has entered an era in which focused projects can contribute to solving regionally and globally significant geologic problems. Geophysical investigations of the sub-ice bedrock have become a prominent part of the program. Aerogeophysical research involving acquisition of such data as surface elevation, ice thickness, and magnetic and gravity data, can be supported as self-contained projects. Satellite imagery also is contributing to research in these areas. Over-snow seismic capabilities are anticipated for the future. Overall objectives of the program are to explain the geology and geological evolution of Antarctica, to understand the relationship of Antarctica to global geodynamic systems, and to exploit unique aspects of Antarctica to address fundamental problems in geology and geophysics.

### 4. Antarctic Glaciology

Supports studies of the world's largest ice sheet. The ice sheet, which covers 97 percent of the Antarctic continent and is up to 4.8 kilometers thick, comprises 90 percent of the world's ice and is a storehouse of information about climate and atmospheric constituents and their variation over time. The program's objectives are to determine the dynamics of the ice sheet, understand the climatic record stored in the layers of firn and ice, determine the history of glacial advance and retreat through the study of glacial/geologic deposits, and determine the present dynamic status of the ice sheet and its relationship to glacial and climatic history.

## 5. Antarctic Ocean and Climate Systems

Supports research projects in the following areas:

- **Atmospheric Sciences**—Antarctica interacts strongly with regional and global weather and climate. Far removed from pollution sources, it is an important monitoring and research area for world background levels of natural and anthropogenic atmospheric constituents. Conditions in Antarctica reflect global atmospheric changes on many scales. The primary research objectives are to improve understanding of the physical processes of the atmosphere; determine the relationship between events and conditions in the Antarctic atmosphere and global events; and assess the region's role in past and present global climate.
- **Physical and Chemical Oceanography**—Supports research on the Southern Ocean, which has a central role in world ocean circulation. Large-scale heat exchange and ice formation at the ocean surface overturn the water column and mix trace constituents making the Southern Ocean the site of global-scale deep-ocean ventilation and one of two primary sources (the other being the Arctic) of the world's intermediate and deep-water masses. Huge changes in the extent of sea ice, which varies annually between 4 and 20 million square kilometers, also influence energy transfer. The Antarctic Circumpolar Current—the world's largest ocean current—has a primary role in general oceanic circulation. Research objectives are to determine the dynamics of formation and distribution of water masses, currents, and sea ice; investigate the relationships among oceanic and atmospheric circulation systems and the physical bases for biotic productivity; and investigate interactions between the Southern Ocean and climate processes.

## 6. Antarctic Operational Support

In addition to funding research, USAP provides operational and laboratory support in Antarctica. Operational support includes the following: a year-round inland research station at the South Pole (90° S.); two year-round coastal research stations with extensive laboratory and computing capabilities—one at McMurdo Station (78°S.) on Ross Island and one at Palmer Station (64°S.) on Anvers Island in the Antarctic Peninsula region; summer field camps for research, as required; the ice-strengthened research ship *Laurence M. Gould*, 70.1 meters in length; the icebreaking research ship *Nathaniel B. Palmer*, 94 meters in length; ski-equipped LC-130 airplanes (for heavy-lift transport); other airplanes; helicopters; a Coast Guard icebreaker for channel breaking at McMurdo as well as research support; over-snow vehicles; and automated, unmanned weather and geophysical observatories. Occasionally, vessels from the U.S. academic fleet and from the Ocean Drilling Program support Antarctic research. NSF-supported research by U.S. scientists can also be carried out as an international collaboration aboard non-U.S. research ships.

Air transport between New Zealand and McMurdo Station is provided several times per week in the austral summer, which runs from early October to the end of February. From McMurdo, a logistics hub, research groups can access other sites, including the station at the South Pole. Several flights are made in August between New Zealand and McMurdo that provide an opportunity for late winter access. The summer camps are closed between February and October, and winter research is limited to the immediate environs of the stations, where residents are isolated for as long as 8 months. Consideration is being given to lengthening the operating season at and near McMurdo. Proposals that would take advantage of this change are welcome.

Palmer Station, on Anvers Island in the Antarctic Peninsula region, relies mainly on the ship *Laurence M. Gould* for transport of people and materials to and from Punta Arenas, Chile, at the southern tip of South America. The ship makes several trips a year and supports onboard research. The *Gould* supports onboard research in marine biology, oceanography, and geophysics in the Antarctic Peninsula region and can support science in other areas of the Southern Ocean.

U.S. Antarctic stations, ships, and some field camps provide voice and data communications (including Internet access) to locations outside Antarctica. For instructions on how to request Antarctic operational support in a proposal, see the *Antarctic Research Program Announcement* ([NSF 02-086](#)).

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## OFFICE OF POLAR PROGRAMS

### Arctic Sciences

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#### Arctic Research Program

NSF's Arctic Research Program seeks to gain a better understanding of the Arctic's biological, geological, chemical, and sociocultural processes, and the interactions of ocean, land, atmosphere, life, and human systems in the Arctic and with global systems. Arctic research is supported by the Office of Polar Programs (OPP) and by other NSF disciplinary programs. The program is structured to allow coordination across NSF disciplines when appropriate, enable joint review and funding of Arctic proposals, and provide mutual support of projects with high logistics costs.

The United States Arctic Research and Policy Act of 1984 defines the Arctic as all areas north of the Arctic Circle and all U.S. territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas; and the Aleutian chain. Field projects falling outside these boundaries but directly related to Arctic science and engineering conditions or issues, such as laboratory and theoretical studies, are appropriate.

NSF is one of 12 Federal agencies that sponsor or conduct Arctic science, engineering, and related activities. As mandated by the Arctic Research and Policy Act of 1984, planning for Federal interagency research is coordinated through the Interagency Arctic Research Policy Committee, chaired by NSF.

Further information on other agency programs is presented in the *U.S. Arctic Research Plan* and its biennial revisions.

The Arctic is the homeland of native peoples and attention must be given to all aspects of research and education that may potentially affect their lives. For more information, see the interagency statement "Principles for the Conduct of Research in the Arctic," available at <http://www.nsf.gov/od/opp/arctic/conduct.htm>. All Arctic research grantees are expected to abide by these guidelines. See also *Arctic Research Opportunities* (NSF 00-96).

The Arctic Research Program is composed of the following:

1. [Arctic Natural Sciences](#)
2. [Arctic Social Sciences](#)
3. [Arctic System Science](#)
4. [Other Arctic Support](#)

#### Target Dates for Arctic Research

The target dates for the Arctic Natural Sciences, Arctic Social Sciences, and Arctic System Science Programs are February 15 and August 8. Proposals for workshops, Small Grants for Exploratory Research, or dissertation improvement grants can be submitted at any time. Further information about these types of grants is available in the NSF *Grant Proposal Guide* (see <http://www.nsf.gov/cgi-bin/getpub?gpg> for the latest version).



## Submission of Proposals for Arctic Research

Submit proposals for field projects (including projects requiring an oceanic research vessel) by February 15 of the year preceding fieldwork.

A minimum of 9 month's advance notice is required for research vessels needing clearance for Russian waters.

For fieldwork in Greenland, fill out the Danish Polar Center application form (see <http://www.dpc.dk/Guide>) and put it in Supplementary Docs in the FastLane proposal submitted to OPP.



### For More Information

Further information about any of the Arctic programs and activities mentioned in this section is available in the publication, *Arctic Research Program Opportunities* (NSF 00-96). Additional information can also be obtained by contacting the Office of Polar Programs, National Science Foundation, 4201 Wilson Boulevard, Room 755, Arlington, VA 22230; or by visiting the OPP home page, <http://www.nsf.gov/od/opp/>.

## 1. Arctic Natural Sciences

Supports research in glaciology; atmospheric, biological, earth, and ocean sciences; and contaminants. The program provides core support for disciplinary research in the Arctic and coordinates its support of Arctic research with the Directorates for Geosciences and Biological Sciences. Areas of special interest include marine and terrestrial ecosystems, atmospheric chemistry, exploration of the Arctic Ocean, and Arctic geological and glaciological processes. The program supports research in the following areas:

- **Atmospheric Sciences**—Focuses on stratospheric and tropospheric processes; Arctic climate and meteorology; research on past climates and atmospheric gases, as preserved in snow and ice cores; and research on atmosphere/sea and atmosphere/ice interactions. In the area of upper atmospheric and space physics, research interests include auroral studies, atmospheric dynamics and chemistry, and magnetosphere-ionosphere coupling. Conjugate studies are considered jointly with the Antarctic Aeronomy and Astrophysics Program.
- **Biological Sciences**—Supports projects that emphasize understanding the adaptation of organisms to the Arctic environment. Biological studies in the Arctic include research on freshwater, marine, and terrestrial biology; organismal adaptation to the Arctic environment; ecology; ecosystem structure and processes; and the biological consequences of ultraviolet radiation.
- **Earth Sciences**—Supports research in all subdisciplines of terrestrial and marine geology and geophysics, with special emphasis on understanding geological processes important to the Arctic regions and geologic history dominated by those processes.
- **Glaciology**—Supports glaciological research, which is concerned with the history and dynamics of all naturally occurring forms of snow and ice, including seasonal snow, glaciers, and the Greenland ice sheet. The Arctic Natural Sciences Program also includes ice dynamics, modeling, glacial geology, and remote-sensing studies of ice sheets. OPP is the focal point for glaciological research within NSF.
- **Ocean Sciences**—Seeks to develop knowledge of the structure of the Arctic Ocean and adjacent seas, their physical and biological interactions with the global hydrosphere, and the

formation and persistence of the Arctic sea/ice cover. Special interest areas include the distribution of life in high-latitude oceans; low-temperature life processes; the formation, movement, and mixing of Arctic water masses; the growth and decay of sea ice; the exchange of salt and heat with the Atlantic Ocean and the Bering Sea; geographical anomalies; sedimentary history; and the role of the Arctic Ocean and adjacent seas in the global climate. Proposals concerned with the interdependencies of chemical and physical processes and marine organisms and productivity are encouraged.

- **Contaminants**—Supports research on the physical, chemical, and biological processes that sequester and disperse contaminants in Arctic natural systems and on the socioeconomic impacts of and human response to such contaminants. Quantification of these processes for a variety of contaminants—including heavy metals, radionuclides, persistent organic pollutants (e.g., pesticides, industrial chemicals), hydrocarbons, ozone (and precursors), and aerosols derived from various parts of the Arctic and other U.S., European, and former Soviet Union sites—is fundamental to appreciating and mitigating their impact on human physical and socioeconomic systems.

## 2. Arctic Social Sciences

Encompasses all social sciences supported by NSF, including anthropology, archaeology, economics, geography, linguistics, political science, psychology, sociology, and related subjects. Unsolicited proposals in any of these social sciences are welcome. Areas of particular interest include rapid social change, including the processes and consequences of social, economic, and cultural change; community viability, including issues related to community and cultural vitality and survival; and human/environment interactions, including issues related to subsistence and sustainable development.

The program encourages projects that include indigenous peoples; are circumpolar or comparative; integrate social and natural sciences; involve collaborations between researchers and those living in the Arctic; include traditional knowledge; or form connections among disciplines, regions, researchers, communities, and students, including those in grades K-12 and undergraduate and graduate programs.

The Arctic Social Sciences Program considers joint review and funding with other programs within OPP and within other NSF directorates when appropriate. Special funding opportunities may also be available through NSF's Environment and Global Change activities (for more information, see the Crosscutting Investment Strategies section of this Guide) or the Arctic System Science Program (see program description elsewhere in this section).

### Projects Involving Human Subjects

Projects involving research with human subjects must ensure that subjects are protected from research risks in conformance with the Common Rule (*Federal Policy for the Protection of Human Subjects*, 45 CFR §690). All projects involving human subjects must either (1) have approval from the organization's Institutional Review Board (IRB) before issuance of an NSF award or (2) identify the applicable subsection exempting the proposal from IRB review, as established in section 101(b) of the Common Rule. The box for "Human Subjects" should be checked on the proposal Cover Sheet with the IRB approval date (if available) or exemption subsection from the Common Rule identified in the space provided.

## 3. Arctic System Science (ARCSS)

The overall goals of the ARCSS Program are to understand the physical, geological, chemical, biological, and sociocultural processes of the Arctic system that interact with the total Earth system and thus contribute to or are influenced by global change; to advance the scientific basis for predicting

environmental change on a seasonal-to-centuries time scale; and to formulate policy options in response to the anticipated impacts of global change on humans and societal support systems. To achieve these goals, ARCSS places strong emphasis on four scientific thrusts: (1) to understand global and regional impacts of the Arctic climate system and its variability; (2) to determine the role of the Arctic in global biogeochemical cycling; (3) to identify global change impacts on the structure and stability of Arctic ecosystems; and (4) to establish links between environmental change and human activity.

Most of the available support in ARCSS is directed toward large integrated research projects that are proposed and implemented in response to scientific plans developed by the science community through Science Steering Committees for each component of ARCSS. However, global change proposals from individual investigators or small groups of investigators are also welcome.

ARCSS includes a component on Human Dimensions of the Arctic System (HARC) (see program announcement [NSF 99-61](#)). The science plan for HARC is available on the Arctic Research Consortium of the United States (ARCUS) home page, <http://www.arcus.org/>; and on the OPP home page, <http://www.nsf.gov/od/opp/>. These sites should be consulted for new developments. In all these components, proposals for new and different research topics are encouraged.

ARCSS also supports the integration of research results across components within the program and with any other Arctic research program through a Synthesis, Integration, and Modeling Studies (SIMS) effort. Science plans approved by each Science Steering Committee, as well as examples of projects supported within each component and SIMS, are accessible on either the web site maintained by the ARCSS Data Coordination Center at the University of Colorado National Snow and Ice Data Center, <http://arcss.colorado.edu/>, or the ARCUS home page.

The Arctic system consists of physical, biological, and cultural factors that may respond to global change. Some models that predict the climatic response to global change show greater change in the Arctic than in any other region. The predicted climatology, however, may not consider the largely unknown interannual variability in the Arctic. The presence of cultural institutions in a region subject to possibly large perturbations makes it important that scientists better understand interactions of the global and Arctic systems. Therefore, the research supported in ARCSS extends beyond purely observational studies to studies that predict and analyze the consequences of global change that are important to wise stewardship of renewable resources and development of policy options for resource managers and residents.

In order to focus on the Arctic system at a scale that incorporates the multiple environmental feedback mechanisms involved, large interdisciplinary projects that integrate major elements of the system will be supported. For more information on how a research proposal might best fit the programs and themes of ARCSS, contact a program manager.

#### 4. Other Arctic Support

The following additional NSF programs and activities also offer research support in the Arctic Research Program.

- **Arctic Research Support and Logistics (RSL)**—The RSL Program has been established in OPP to address all field program requirements. The primary means of accessing this support is through the regular proposal process. Investigators should be able to justify the field support in the context of their proposal and are encouraged to consider the following in particular: increased mobility to and within the Arctic; increased safety potential of satellite-based global phone networks; use of field staff trained and experienced in field (and boat) safety and first aid; increased interaction with local communities; and use of equipment improved for use during fieldwork in Arctic conditions.

Support for grantees from the RSL Program includes food and shelter during the course of the fieldwork; user- and day-rate fees; salaries of staff hired specifically for fieldwork; and the steps necessary to coordinate projects with permitting agencies and native peoples.

A brief section within the proposal and in the budget explanation should outline the field plan and associated costs. If a third party (e.g., VECO, see below) is going to provide support, then those costs do not need to be included in the proposal budget.

The program manager from the program supporting the research, in consultation with the manager of the program, will determine the level of support that can be provided by RSL. In some cases, OPP may determine that several unrelated proposals can derive significant cost benefits from a centrally managed resource. If so, NSF's Arctic Support Contractor (VECO Polar Resources) or another entity will be responsible for coordinating the support with the principal investigators, consistent with the agreements between the investigators and their program managers. Work also can be proposed as a large coordinated activity, supported at some level by the science team or a support contractor.

The Barrow Arctic Science Consortium supports work at most sites on Alaska's North Slope. The Institute of Arctic Biology at the University of Alaska supports work at Toolik Field Station (see <http://www.uaf.edu/toolik/>). The contractor manages support at most other Arctic sites including use of military airlift, support to and within Greenland, and support in Arctic Alaska. The contractor can provide additional information and can coordinate with other nations' logistics providers, such as Canada's Polar Continental Shelf Program.

Investigators are encouraged to discuss support options with the Arctic contractor, VECO Polar Resources (<http://www.veco.com/vpr/>), before they prepare proposals. All work should be described in the proposal.

- **Arctic Research and Policy**—OPP supports the management of Arctic data and information. The objective is to make data and information resources more readily available to researchers. Proposals to integrate data and information management are encouraged. Further information is available at the National Information Services Corporation home page, <http://www.nisc.com/request/bibltrial.asp>.
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## OFFICE OF POLAR PROGRAMS

### Crosscutting Programs

The Office of Polar Programs supports research in several disciplines, thus, a number of NSF-supported programs that cross traditional disciplinary boundaries will be of interest to investigators planning polar research and education projects.

These crosscutting programs offer significant additional opportunities for support. OPP strongly urges investigators considering polar research to examine the programs before submitting proposals.



#### For More Information

Visit the NSF Crosscutting Programs home page,  
<http://www.nsf.gov/home/crssprgm/>.

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